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Amendments to the Claims

The following listing of claims supersedes all previously pending claims:

1. (original): A search engine system, comprising:
 - a memory bank coupled to a bank selection signal;
 - a plurality of mask logic blocks, wherein each mask logic block is configured to receive a constructed key and an incoming key mask and to provide a masked key;
 - a plurality of hash function blocks, wherein each hash function block is configured to receive at least two of the masked keys and to provide at least three hash function outputs; and
 - a multiplexer configured to receive a plurality of hash function outputs and to provide the bank selection signal.
2. (currently amended): The search engine system of claim 1, wherein:
 - the memory bank includes memory that is substantially static random access memory (SRAM) type.
3. (original): The search engine system of claim 1, wherein:
 - the memory bank is arranged as a plurality of buckets, wherein each bucket includes a plurality of entries.
4. (original): The search engine system of claim 3, wherein:
 - the bank selection signal is configured to select one of the plurality of buckets.
5. (original): The search engine system of claim 3, wherein:
 - each of the plurality of entries includes a stored key pattern field, a local mask field, and a hash function indication field.
6. (original): The search engine system of claim 1, wherein:

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the constructed key includes information from a packet header.

7. (original): The search engine system of claim 1, wherein:
each of the plurality of mask logic blocks includes a logical-AND type function.
8. (original): The search engine system of claim 1, wherein:
each of the plurality of hash function blocks includes:
a first hash function generator configured to receive a first masked key and to provide a first hash function output;
a second hash function generator configured to receive a second masked key and to provide a second hash function output; and
a third hash function generator configured to receive the first masked key and the second masked key and to provide a third hash function output.
9. (original): The search engine system of claim 8, wherein:
the third hash function output is configured for a concatenated key type search.
10. (original): The search engine system of claim 8, wherein:
each of the first, second, and third hash function generators includes a Cyclic Redundancy Code (CRC) type function.
11. (original): The search engine system of claim 1, wherein:
the multiplexer is configured to receive at least eight hash function outputs.
12. (original): The search engine system of claim 11, wherein:
the at least eight hash function outputs includes outputs from at least four different hash function blocks.
13. (original): The search engine system of claim 9, wherein:

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the concatenated key type search includes a same address selection in a first memory bank and a second memory bank.

14. (original): The search engine system of claim 5, further comprising:

a comparator configured to provide a match indication for each of the plurality of entries in response to a comparison between the constructed key and the stored key pattern.

15. (original): The search engine system of claim 14, wherein:

the comparator includes an AND-function block configured to provide a masking of the constructed key by applying the local mask field.

16. (original): The search engine system of claim 12, wherein:

the multiplexer is configured to select a different one of the outputs from the at least four different hash function blocks in response to a clock signal.

17. (original): The search engine system of claim 3, wherein:

in a first mode, each of the plurality of entries is configured to be responsive to any of the plurality of hash function outputs; and

in a second mode, each of the plurality of entries is configured to be responsive to a designated one of the plurality of hash function outputs.

18. (currently amended): A method of searching a table populated with a plurality of entries, comprising the steps of:

constructing a plurality of keys;

performing a key masking on each of the plurality of keys to provide a plurality of masked keys, wherein the plurality of masked keys provide for a bit-by-bit search of the plurality of entries;

performing a hashing on each of the plurality of masked keys;

determining if a system is in a shared mode;

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if the system is in the shared mode, sharing a plurality of hash functions for an entry of a memory bank;
if the system is not in the shared mode, hard configuring the hash functions for the entry of the memory bank;
selecting a bucket from the memory bank, wherein the bucket includes the plurality of entries;
applying a local mask;
performing a comparison to provide one or more match indications; ~~and~~
determining a precedence from among the one or more match indications; and
selecting a match from the one or more match indications based on the precedence, the match corresponding to one of the plurality of entries.

19. (original): The method of searching the table of claim 18, wherein:

the constructing the plurality of keys includes getting information from a packet.

20. (original): The method of searching the table of claim 18, wherein:

the performing the hashing includes using a Cyclic Redundancy Code (CRC) type function.

21. (canceled)

22. (newly presented): The method of claim 18 wherein the plurality of masked keys further provide for a field search of the plurality of entries.

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